



**U.S. Department of Justice**  
Federal Bureau of Investigation

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# **Evaluation of Pilot Distance Learning Course**

**Interactive Multimedia Instruction  
&  
Simulation Program**

Operational Training Unit  
National Security Division  
Federal Bureau of Investigation

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## Table of Contents

<b>Executive Summary</b> .....	<b>5</b>
<b>Introduction</b> .....	<b>9</b>
<b>Purpose</b> .....	<b>10</b>
<b>Process</b> .....	<b>11</b>
<b>Exam Procedures</b> .....	<b>12</b>
<b>Course Evaluation</b> .....	<b>13</b>
<b>Course Distribution and Administration</b> .....	<b>14</b>
<b>Project Evaluation</b> .....	<b>15</b>
<b>Level 1-Reaction</b> .....	<b>16</b>
<b>Level 2-Learning</b> .....	<b>19</b>
<b>Level 3 -Behavior</b> .....	<b>20</b>
<b>Level 4-Results</b> .....	<b>23</b>
How much did SA productivity increase because of the ICI course? .....	24
How much money was saved because of the ICI course? .....	24
How many more people can NSD/OTU train as a result of the ICI course? .....	29
<b>Support Employee Use of ICI Course</b> .....	<b>31</b>
<b>Relationship Between IMIS and Other Forms of Distance Learning</b> .....	<b>31</b>
<b>Summary</b> .....	<b>33</b>
<b>Appendix A- Distribution Phases</b> .....	<b>37</b>
<b>Appendix B- Question Bank Numbers by Course Objectives</b> .....	<b>39</b>
<b>Appendix C- Pre- and Post-Test Results</b> .....	<b>41</b>
<b>Appendix D-Hourly Wages</b> .....	<b>45</b>

## **Executive Summary**

Approximately \$2,000,000 will be saved through the implementation of the National Security Division's Operational Training Unit (NSD/OTU) development of a distance learning course to replace one full week of training at the FBI Academy.

In November 1994, NSD/OTU determined it could no longer train National Foreign Intelligence Program employees exclusively in the manner in which it was accustomed -- traditional platform instruction. To help alleviate mounting training deficits, NSD/OTU entered into a joint project with the Training Division's Computer Based Training Center (TD/CBTC) to develop the FBI's first in-service caliber distance learning course. TD/CBTC assigned its top technology based training expert to lead the development of this course. Once development and delivery of the Introduction to Counterintelligence (ICI) course was completed, evaluation of the ICI course became the responsibility of NSD/OTU's leading distance learning expert who transferred from the TD/CBTC.

Examination of NSD/OTU's two-week, 80-hour, residency Basic Counterintelligence In-Service (BCI) revealed the BCI could be more appropriately delivered to newly assigned foreign counterintelligence (FCI) Special Agents (SAs) by dividing the BCI into two separate courses. The first half of the training would be delivered to SAs at their job sites via the ICI course. The second half of the training would continue to be delivered at the FBI Academy via a 40-hour, one week residency companion BCI course. It was the ICI course which would be developed via the joint initiative between NSD/OTU and TD/CBTC.

The ICI course consists of written materials, video tapes, and computer based training (CBT) software. Designed to be taken at the SA's own pace and convenience, the ICI was distributed to the field in three phases beginning in late November 1996.

The methodology used to evaluate the ICI was based on Donald Kirkpatrick's Four Levels of Evaluating Training Programs. Each of Kirkpatrick's evaluation levels addressed a specific area of concern for any training program. "Level 1 - Reaction" dealt with how trainees reacted to the course. "Level 2 - Learning" measured whether trainees learned as a result of completing the course. "Level 3 - Behavior" revealed whether trainees' job-related behavior changed as a result of the course. And, "Level 4 - Results" determined whether SA productivity increased, NSD/OTU productivity improved, and/or financial savings occurred because of the course.

The results of the evaluation at all four levels are impressive. "Level 1 - Reaction" evaluation revealed that those who completed the ICI course liked it, and they believed the ICI course was beneficial to their jobs. Many requested that additional courses be developed using the same methodologies.

"Level 2 - Learning" evaluation consisted of knowledge testing to determine SA knowledge levels before (pre-test) and after (post-test) taking the course. For this evaluation effort, the ICI course's final exam served as the post-test. The post-test scores showed a mean average improvement of 20 percentage points over the pre-test scores. A mean average improvement of this magnitude is statistically significant.

"Level 3 - Behavior" evaluation was determined by comparing behavioral differences of SAs who completed the former two-week residency course, with SAs completing the new

version of the same course. The behavioral comparisons were made by NSD/OTU instructors who taught both versions of the course. All of the participating instructors identified positive behavioral changes in trainees taking the new method of training delivery for the companion one week BCI. While it is recognized that “Level 3 - Behavior” evaluation was limited in scope because of time constraints, changes in SA on-the-job behavioral performance will be evaluated via questionnaires to the appropriate Supervisory Special Agents (SSAs) at a later date.

Finally, “Level 4 - Results” evaluation was the most remarkable. First, potential SA productivity dramatically improved as a result of the ICI course. SAs were able to complete the ICI course, or the equivalent of the former two-week residency BCI’s first week of training, in a mean average time of 15 hours. Based on an SA’s average 50-hour work week, this equates to a time savings of 35 hours per SA trained using this new training delivery method. This represents a 63% reduction in training time which can be redirected to investigative matters. Thus, for every 74 SAs who complete the ICI course, one full SA work year can be redirected to FCI matters. Second, NSD/OTU productivity exploded. Because 116 copies of the ICI course exist and SAs can complete the course so quickly, NSD/OTU has the potential of providing basic training to 914 employees over any 80-hour period. Finally, ICI saves the FBI \$1,170 for each SA who completes the course. During the ICI’s first year, savings will approach \$617,760. And, because expenses for developing the course totaled \$138,487, the ICI course paid for itself in only a little more than 2.5 months. The ICI course was developed using methodologies which provide a three-year shelf life; the ICI has the potential of saving the FBI \$1853,280 over the course of its lifetime. It should be noted that these financial savings are based only on per diem expenses and salary dollars returned to investigative matters. Travel expenses were excluded

from this phase of the evaluation as the ICI trainees will travel to the FBI Academy to attend the revised companion one week BCI in-service.

The ICI course is asynchronous distance learning. Asynchronous distance learning is designed to deliver training at a trainee's own pace, time, and convenience. It uses a variety of mediums, e.g., written materials, video tapes, CBT, and interactive multimedia. Asynchronous distance learning provides the greatest cost efficiency because it routinely compresses training time. Synchronous distance learning, on the other hand, most closely resembles traditional platform instruction. It requires trainees to gather at a specific place, at a specific time, and for a specific time period. A 40-hour platform course will most likely be a 40-hour synchronous distance learning course. The same 40-hour platform course, as shown by NSD/OTU's ICI course, can be completed in as little as 15 hours.

When attempting to project future FBI savings for other ICI-type courses, additional savings will be realized for those courses which totally convert to asynchronous distance learning by eliminating a companion training course at the FBI Academy. In those instances when companion training is eliminated, per trainee savings will be increased to \$1,570 to reflect the inclusion of travel expenses.

This evaluation report for the ICI course is based on the results of the first 50 SAs completing the course which is the equivalent of two BCI in-services. The benefits gained by the ICI course are inter-divisional. The Training Division realizes per diem savings while NSD receives increased investigative resources. The ICI course has established the benchmark which other FBI-sponsored distance learning initiatives will be compelled to meet.

# **Evaluation of Pilot Distance Learning Course**

## **Interactive Multimedia Instruction & Simulation Program**

### **Introduction**

In November 1994, the National Security Division's Operational Training Unit (NSD/OTU) determined that it could no longer afford to train National Foreign Intelligence Program employees exclusively in the manner in which it was accustomed -- traditional platform classroom instruction. This determination was based on diminishing instructor and financial resources as well as exponentially increasing training demands. To help improve training delivery, NSD/OTU incorporated interactive training technology, where appropriate, into its instructional arsenal. To accomplish this, NSD/OTU entered into a joint project with the Training Division's Computer Based Training Center (TD/CBTC) to produce a basic counterintelligence course.

This joint project focused on developing the first self-paced, on-demand, distance learning in-service training course in the history of the FBI. The TD/CBTC's top technology based training expert, Patricia M. Boord, headed the development team. The development team consisted of NSD/OTU subject matter experts (SMEs), Unit Chief Jonathan P. Binnie and Supervisory Special Agent (SSA) Richard A. Spicer and one other TD/CBTC employee. The team not only developed the pilot distance learning course, but also established administrative procedures for handling the various components associated with delivering distance learning courses, e.g., course registrations, exam evaluations, and student academic support systems.

As the project developed, it became evident that NSD/OTU would need to refrain from using the term “distance learning” to describe this pilot project because of the broad, and sometimes misleading, definitions associated with the term “distance learning.” To alleviate this problem, NSD/OTU referred to this pilot project as the Interactive Multimedia Instruction and Simulation (IMIS) Program. The field’s understanding of the concept of using a variety of technologies to deliver training has been enhanced by using the acronym “IMIS.”

Once the pilot IMIS course was developed, evaluation of the pilot course was the responsibility of the technology based training expert, Patricia M. Boord, who transferred to NSD/OTU to manage the IMIS Program. This report is based on the evaluation process conducted by the IMIS Program Manager and will be shared with the Training Division and other FBIHQ divisions after dissemination to NSD Executive Management.

## **Purpose**

IMIS is defined as:

The application of interactive instructional methodologies to training which is delivered to learners who are separated from their instructor, and possibly other learners, by space and time.

The pilot IMIS course, Introduction to Counterintelligence (ICI), was developed using the most contemporary theories of instructional systems design, adult learning, technology based training, and distance learning. It was designed to:

- Enable Special Agents (SAs) to receive introductory counterintelligence (CI) training immediately upon transferring to a foreign counterintelligence (FCI) squad.
- Reduce the length of the two-week, or 80-hour, Quantico-based Basic Counterintelligence In-Service (BCI) by one full week (50%).



- Eliminate the period of time newly assigned FCI SAs waited to take the old Quantico-based BCI course.
- Enable NSD/OTU to train twice as many SAs each year as would be possible using current conventional classroom delivery methods.
- Enable NSD/OTU to enhance New Agents and other CI training by using portions of this project in other curricula.

## **Process**

This project began with a thorough evaluation of the existing two-week 80-hour BCI residency in-service. The evaluation determined that a more efficient manner of using NSD/OTU resources and students' time was to divide the two-week BCI into two separate courses. The first course, Introduction to Counterintelligence (ICI), is delivered via the IMIS Program and offered to SAs during their first 30 days of reporting to an FCI squad. The content of this field office course is the equivalent of the first week of training in the former two-week residency BCI. The second course, Basic Counterintelligence (BCI), is a one week residency companion course. The content of this one week companion course focuses on applying the knowledge gained in the ICI to work-related practical problems while at the FBI Academy.

The ICI course was developed in a manner which utilized the strengths of various interactive instructional mediums while balancing the availability of development resources, i.e., time, personnel, and field computer hardware. It consists of written materials, video tapes, and computer based training (CBT) exercises. The course is divided into nine modules. Each module begins with a series of written pages and concludes with either CBT exercises and/or video tapes. A majority of the CBT exercises emphasize applying knowledge gained to work-

related situations and decisions. Each trainee's answer or decision, whether correct or incorrect, is followed immediately with feedback to clarify why a particular answer/decision may be correct or incorrect. Each module builds upon knowledge gained in previous modules. Once a trainee completes the instructional modules, he is given an opportunity to run three case scenarios via CBT. The scenarios enable the trainee to apply the concepts learned in the course to real-world decisions. After the trainee completes the three final scenarios and believes he has mastered the course content, he requests the ICI final exam from the IMIS Program Manager at Quantico.

## **Exam Procedures**

The final ICI exam is an open book, computer-based test which measures the knowledge a trainee has gained after completing the course. An open book format was chosen for the exam as an FCI SA essentially functions in an "open book" work environment, i.e., he has the ability to consult various manuals and knowledgeable individuals before making work-related decisions. The only component of the real-world which was removed from the exam was the ability of the trainee to consult with others while taking the exam. The trainee can, however, refer to any written materials.

The trainee must pass the final ICI exam with a score of 80% or higher. If a trainee fails the final ICI exam, he has two opportunities to retake the failed items. During the first remedial exam, the trainee is offered counseling and remedial instruction by his assigned NSD/OTU instructor on the topical areas he failed. Once the trainee feels comfortable with these areas, he can request the first remedial exam.

If a trainee fails the first remedial exam, his supervisor is then notified of the second failure (initial final exam failure + 1 st remedial final exam failure). At this point, both the trainee's field supervisor and assigned instructor will offer counseling and remedial instruction in an effort to help the trainee learn the concepts which were failed. When the trainee is comfortable with his remedial learning, he requests the second and final remedial exam.

Should a trainee fail the second remedial exam, the Unit Chief NSD/OTU notifies the trainee's Special Agent in Charge (SAC) and field supervisor of this failure. It then becomes the decision of the trainee's SAC as to whether or not the trainee should be given additional opportunities for remedial training or transferred to a non-FCI squad.

Passing the ICI final exam is highly significant to an FCI SA's successful job performance. Failure to do so makes the SA ineligible to attend subsequent FCI training and calls into question the SA's ability to perform FCI work at an acceptable level. This strict policy was developed with great forethought as it is **critical** that the SA achieve a basic understanding of the concepts in this introductory course. It is the foundation upon which future FCI training and job performance are built.

## **Course Evaluation**

Once the pilot course was developed, it was evaluated in part or in its entirety by approximately 75 FBI employees involved directly with CI operations plus several others who are credentialed in instructional design and technology based training methodologies. Among the FCI operational personnel were:

- National Security Programs Field Supervisors and Relief Supervisors assigned to nearly every field office during two conferences held at the FBI Academy

- NSD Assistant Director's Field Supervisors Advisory Council
- Representatives from NSD subprograms
- Office of General Counsel, National Security Law Unit

Final evaluation of the pilot course was conducted with ten field agents, half of whom had attended the former two-week BCI in the previous eighteen months and half of whom had not attended any BCI. Throughout the development period, the comments of these individuals were taken into account and used to refine the course materials.

## **Course Distribution and Administration**

In late November 1996, the evaluation of the ICI course was completed and a decision was made to distribute the course to the field in three phases based on several issues. When delivering IMIS courses or any type of distance learning course, it is necessary to create an environment which minimizes the trainee's sense of "being on his own." In the pilot IMIS course, this was accomplished by assigning all course trainees to an NSD/OTU instructor. However, because NSD/OTU has limited instructor resources versus the large numbers of SAs who need CI training, it was determined that distributing the course to the field in three phases would minimize the impact IMIS student support would have on NSD/OTU instructor resources. Additionally, no one could identify how much support IMIS course trainees would need from their assigned instructors. Therefore, the field was divided into three groups and received the IMIS pilot course in approximately 30-day increments. (See Appendix A for a breakdown of field offices and corresponding distribution phases.)

Administering the pilot ICI course relies upon support from select FCI field supervisors and/or FCI training coordinators, when appropriate. Each field office is assigned a specific number of copies of the ICI course based on FCI funded staffing levels and previously surveyed training needs. The copies of the course are inventoried and assigned to a specific FCI field supervisor and/or FCI training coordinator to maintain control of the classified course materials as well as to ensure that appropriate changes are inserted into the course materials when necessary.

When an SA is assigned to FCI matters, the FCI supervisor provides the SA with a Course Registration form. After the registration form is mailed or faxed to the IMIS Program Manager, the SA checks-out a course binder and begins working through the course materials. Once the IMIS Program Manager receives the registration form, the student is assigned to one of the NSD/OTU instructors who are selected on a rotational basis. The IMIS Program Manager also sends the student an acknowledgment of his course registration and a copy of the “Introduction to Counterintelligence - Reference and Note Taking Guide.” The “Reference and Note Taking Guide” provides a printed copy of pertinent reference information and affords the SA an opportunity to take notes while proceeding through the course materials. This enables the SA to retain pertinent information after he completes the course.

## **Project Evaluation**

This Evaluation Report will focus on the changes associated with the delivery of the ICI course. The evaluation began with the Phase 1 distribution and continued until fifty trainees, the equivalent of two BCI in-services, completed the course by passing the final exam. The actual

procedures used in this evaluation are based on Donald Kirkpatrick's Four Levels of Evaluating Training Programs. In 1959, Kirkpatrick developed this model to comprehensively address all facets of evaluating any type of training program. It is the most widely used approach to evaluating training in the corporate, government, and academic worlds.

Kirkpatrick's Four Levels of Evaluation are based on the premise that to fully understand the effectiveness of any training program, four distinct areas must be evaluated. These evaluation areas and their definitions are:

Level 1 - Reaction	Measures how those who participated in the pilot project reacted to it.
Level 2 - Learning	Measures to what extent trainees in the pilot project changed their attitudes, knowledge, or skills as a result of the training.
Level 3 - Behavior	Measures to which extent changes in behavior have occurred because the trainees completed the pilot course.
Level 4 - Results	Measures the return on investment associated with implementing the pilot course.

Each of the following sections will address an evaluation level.

## **Level 1 - Reaction**

Evaluating Reaction focuses on measuring how those who participated in the pilot project reacted to the training. This was accomplished by presenting each course trainee with a series of nine statements which addressed various aspects of the course such as course content, enjoyment, and directions. Course trainees then responded to the statements with one of four choices -- Strongly Disagree, Disagree, Agree, Strongly Agree. Each of the trainees' responses was then given a numerical value ranging from one (Strongly Disagree) to four (Strongly Agree). The

mean average of the trainees' responses ranged from 3.1 to 3.6 which indicates that the trainees' overall satisfaction with the ICI course was rated highly. (See Table 1 for a list of the statements presented to the trainees and the average numerical values associated with their responses.)

Statement	Trainees' Average Response
The course's goals and objectives were met.	3.3
The course's content was adequate.	3.3
I enjoy this type of training.	3.1
I found this course useful.	3.4
The directions were easy to follow.	3.6
The course flowed in a logical sequence.	3.3
I found the course interesting.	3.4
The course was related to my job.	3.6
I received adequate support from my instructor.	3.3
<p style="text-align: center;"><b>Answer Values</b></p> <p>Strongly Disagree = 1      Disagree = 2      Agree = 3      Strongly Agree = 4</p>	

**Table 1.** Trainees' Course Reaction Averages.

The trainees were also given two additional opportunities to cite which aspects of the course they specifically liked and disliked. They were also asked to state their overall opinion about the course. When asked what the trainees' liked best about the course, most commented about the ability to receive training without traveling, using CBT modules to simulate the work environment, and the convenience of fitting training into personal daily schedules. Trainees' comments, pertaining to those aspects of the training they liked least, cited work distractions interrupting their self-directed training and the fact that some questions had more than one

correct answer. Thirty-eight percent indicated there was nothing they disliked about the course. The IMIS Program Manager had many telephone conversations with those trainees who indicated course dislikes. The results of those discussions indicated that most trainees were not interrupted during training by managers but rather they voluntarily interrupted the training themselves because they did not want to postpone work-related questions and/or inquiries by other SAs. This issue should resolve itself once SAs learn how to manage this type of training. Also, because of the nature of CI work, trainees tended to “read-in” information into CBT questions which resulted in complicating the questions. When queried as to the ambiguity of the questions without “reading-in” information, most trainees agreed the questions and answers were appropriate as they appeared.

Finally, when the trainees were given an opportunity to state their overall opinion about the course, none had negative comments. The majority (87%) had positive comments. These included statements such as:

- “Very informative course which saves time and money.”
- “Good instruction and well presented.”
- “Very informative course -- would like more training like this.”
- “Good way to convey a lot of information in a relatively short time.”
- “Excellent multimedia presentation.”

The remaining 13% of the trainees had no comments.



## **Level 2 - Learning**

The second level of evaluation is Learning. No change in trainee behavior (Level 3 evaluation) can be expected unless learning has been accomplished. To measure whether learning occurred in the ICI course and to maintain exam integrity, a bank of questions was developed for each of the course's 22 objectives. The number of questions in each bank was based on the total number of questions the SMEs believed were necessary to ensure comprehension of each objective, and then multiplying that number by five. For example, if the SMEs believed that a trainee needed to answer 3 questions to prove comprehension of Objective 2, a total of 15 questions would be developed for the Objective 2 question bank (3 questions for Objective 2 X 5). See Appendix B for a table of the ICI course objectives and the maximum number of questions chosen by the SMEs.

Once a bank of questions was developed for each ICI course objective, questions for each course objective were extracted randomly from each question bank. The number of questions extracted was equal to the number of questions the SMEs believed a trainee needed to answer to prove comprehension of that objective. These questions then became part of the ICI's written pre-test and were removed permanently from consideration for the ICI's final exam (post-test). The pre-test was in a written format to facilitate reproduction by appropriate field FCI SSAs and training coordinators.

The questions remaining in the objective banks were used for the ICI's final exam. A computer program randomly selected from each question bank a pre-determined number of questions. Again, the number of questions chosen was equal to the number of questions

identified by the SMEs to prove comprehension. The final exam was administered to the trainees via computer. By selecting exam questions in this manner, NSD/OTU management ensured an exponentially varied number of unique exams, thus ensuring exam integrity. Once a trainee completed the exam, it was returned by mail to the IMIS Program Manager for evaluation.

Both the pre- and post-tests contained 53 questions. The mean average pre-test score was 70.66% and the mean average post-test score was 90.56%. This Level 2 evaluation of the ICI course clearly demonstrated that learning did occur with the ICI course with a mean average of 19.9% difference between pre- and post-test scores. Table 2 illustrates the statistical significance of this difference. See Appendix C for specific pre- and post-test results.

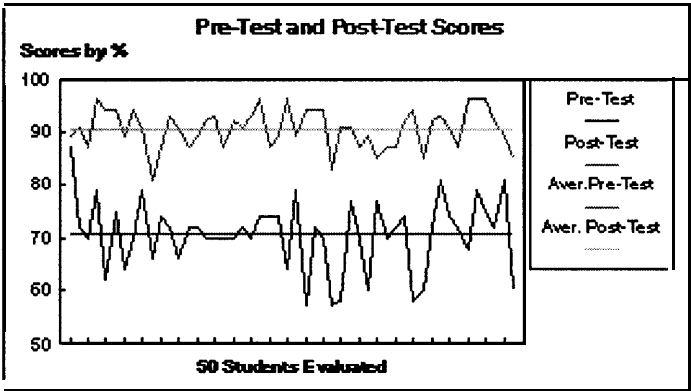


Table 2. Pre-Test and Post-Test Scores.

### Level 3 - Behavior

Level 3 evaluation pertains to the changes in behavior that course trainees demonstrated as a result of completing the training. This is the most difficult of the four evaluation levels to

measure because:

- Trainees cannot change their behavior until they have an opportunity to do so.
- It is impossible to predict when a change in behavior will occur.

Various methods can be used to complete this level of the evaluation process. Some of the methods, such as interviewing or surveying supervisors and conducting post training exams in six-, twelve-, and eighteen-month intervals, would significantly delay the overall evaluation process of the ICI pilot course and were deferred until a later date. The method chosen to help meet this level of evaluation without delaying the overall project evaluation was the surveying of on-board NSD/OTU instructors. NSD/OTU is fortunate to have a group of instructors who taught both the former two-week residency BCI and the new one week companion BCI. The method which lent itself well to both meeting NSD/OTU time requirements and fulfilling this evaluation level was the comparison of the behavior exhibited by trainees by the same instructors who taught both types of in-services.

To accomplish this evaluation, appropriate NSD/OTU instructors were presented with a series of six statements which addressed various aspects of behavior changes between former and new BCI trainees. The instructors then responded to the statements with one of four choices -- Strongly Disagree, Disagree, Agree, Strongly Agree. Each of the instructors' responses was then assigned a numerical value ranging from one (Strongly Disagree) to four (Strongly Agree). The mean average of the responses provided by the instructors ranged from 3.6 to 4. (See Table 3 - Instructors' Average Behavior Change Evaluation for a list of the statements presented to the instructors and the average numerical values associated with their responses.) Based on the mean

average of the instructors' responses, a positive change in trainee behavior occurred as a result of the ICI course.

Statement	Instructors' Average Response
<b>The trainees who completed the IMIS course before attending the BCI...</b>	
...demonstrated a greater understanding of basic CI concepts than former BCI trainees.	3.8
...grasped complex CI concepts easier than former BCI trainees.	3.6
...executed practical problems more successfully than former BCI trainees.	4
...asked more complex or higher level questions than former BCI trainees.	3.8
...made fewer judgmental mistakes in practical problems than former BCI trainees.	3.6
...had superior attitudes of working CI investigations than former BCI trainees.	3.8
<p style="text-align: center;"><b>Answer Values</b></p> <p style="text-align: center;">Strongly Disagree = 1      Disagree = 2      Agree = 3      Strongly Agree = 4</p>	

**Table 3.** Instructors' Average Behavior Change Evaluation.

The instructors were also given two additional opportunities in which they could identify any other positive or negative observations about behavior differences between former and new trainees. Finally, they were asked to state their overall opinion about the differences between former and new BCI trainees. When asked about positive changes in trainee behavior, all instructors commented on the new trainees having a greater grasp of fundamental concepts and

their ability to excel during practical problems. None of the instructors identified any negative behavior changes between former and new BCI trainees.

Finally, when the instructors were given an opportunity to state their overall comments about behavior differences between former and new BCI trainees, 60% had positive comments.

The remaining 40% had no other comments. These final comments included statements such as:

- “As a general rule, people are more comfortable in a situation when they understand why they are there and what they are supposed to do. The new BCI students clearly fit into this category. The level of instruction at the new BCI was significantly higher because of this. The students were ready to learn more about a topic they were already familiar with. The new subject matter built upon the previous IMIS course material and was readily understandable by the new BCI students. This was one of the most worthwhile teaching experiences I have had.”
- “Great improvement over old method of instructing.”
- “The students who took the IMIS course seemed very positive and motivated during the entire week of BCI.”

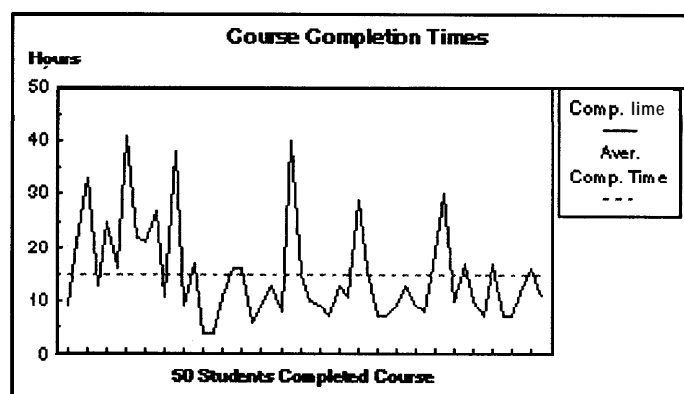
AS stated earlier, a more comprehensive evaluation of trainee behavioral change is being deferred until a later date so as not to delay the overall completion of the ICI pilot course evaluation.

## **Level 4 - Results**

Level 4 evaluation, Results, is the most important component of the evaluation process. It measures organizational gains as a result of trainees participating in the ICI course. The questions answered by this evaluation phase are:

- How much did SA productivity increase because of the ICI course?
- How much money was saved because of the ICI course?
- How many more people can NSD/OTU train as a result of the ICI course?

*How much did SA productivity increase because of the ICI course?* SAs who took the ICI course and then traveled to the FBI Academy for the new one week BCI companion course have shown the potential for a significant increase in productivity. The ICI course is the equivalent of the first week, or forty hours, of instruction in the old BCI; however, SAs completing the ICI course covered the same amount of material in a mean average of 15 hours. This 63% reduction in training time numerically indicates that SAs have the potential of returning an average of 25 hours back to investigative matters but this does not reflect the true working environment of the SA. Because each SA works an average of 50 hours a week, the true potential hours returned back to investigative matters as a result of the ICI course are 35 hours. This means that for every 74 SAs who complete the ICI course, potentially one additional SA work year is added to CI investigative matters. The ICI course significantly improved SA productivity. Table 4 graphically depicts the ICI course trainees' completion times.



**Table 4.** Trainees' Course Completion Times.

*How much money was saved because of the ICI course?* Determining monies saved as a result of the ICI course can be identified by balancing the cost of developing and delivering the course against savings in per diem costs and dollars returned to investigative matters. Travel

costs were excluded from this phase of the evaluation due to the fact that the SAs still needed to travel to the FBI Academy to attend the new one week BCI companion course. Later in this report, travel costs will be included when savings are projected for the conversion of future one week in-service training to the IMIS format.

Expenses for the ICI can be separated into three categories -- labor/travel, materials, and existing assets. The labor/travel' costs include the developer, subject matter experts (SMEs), Instructional Systems Design (ISD) expert, field SSAs who reviewed the course, and other Training Division (TD) employees. The labor/travel costs totaled \$133,931 (See Table 5 for line item labor/travel expenses).

Person/Group	Cost
Course Developer	\$68,288
Primary SME	\$15,644
Secondary SME	\$7,820
68 Field SSA Evaluators	\$24,300
ISD Expert	\$1,284
TV Studio	\$13,057
Database Developer	\$649
FBIHQ SMEs	\$2,889
<b>Total</b>	<b>\$133,931</b>

**Table 5.** Labor/Travel Expenses.

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<sup>1</sup>All labor costs in this evaluation report are based on an employee's base salary and when appropriate locality pay, cost of living allowance, and availability pay. Salaries were not adjusted to reflect other benefits, e.g., health, retirement, etc. Travel and per diem figures are based on the allowances the Training Division uses when calculating student expenses while attending training at the FBI Academy.

Expenses, for materials to produce and distribute the ICI training packages included items such as shipping, binders, video tapes, totaled \$4,556. See Table 6 for materials line item costs.

<b>Materials</b>	<b>Costs</b>
Federal Express	<b>\$467</b>
Examiner Software	<b>\$1,977</b>
Floppy Disks	<b>\$462</b>
Video Tapes	<b>\$619</b>
Plastic Floppy Disks Sleeves	<b>\$71</b>
Binders	<b>\$ 960</b>
<b>Total</b>	<b>\$4,556</b>

**Table 6.** Materials expenses.

The final component of expenses are existing assets which existed before the ICI course was initiated and were “borrowed” or purchased in large quantities as general supplies before the ICI course was developed. No additional costs were incurred for these assets. They include:

- Computers used to develop and test the course.
- Software used to develop the course.
- Buildings, utilities, maintenance, and supporting infrastructures.
- Video and printing reproduction facilities.
- General supplies, e.g., paper, dividers, staples, boxes, strapping tape, shipping

The grand total expenses for the ICI project development equaled \$138,487.

The only other expenses associated with the course are those which are incurred when



trainee, and transmitting an exam to a trainee. These costs total approximately \$8 per trainee. This figure is based on sending two, 1 pound or less packages to each trainee via Federal Express. Trainees submitting registrations and exams for grading often use the facsimile machine or general FBI mail in lieu of direct Federal Express service, respectively. The costs associated with these later transmission methods are inconsequential.

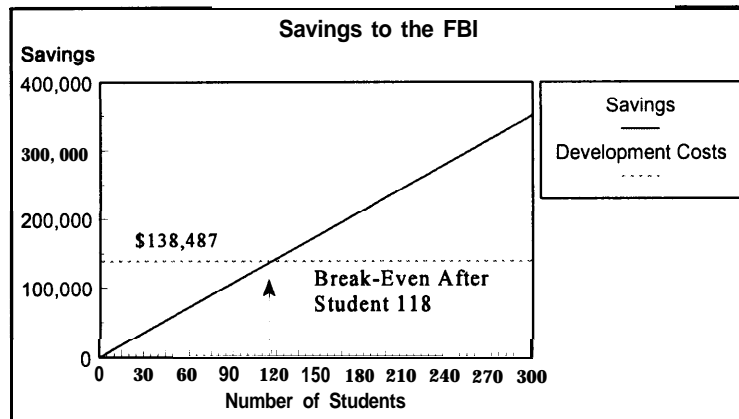
Savings were computed on a per trainee level. They are based on the mean average of the total number of potential investigative hours saved as a result of taking the ICI course, multiplied by the hourly salary of each ICI course trainee. Rounded, this amounts to \$705 per ICI course trainee in dollars returned to investigative matters. See Appendix D for a detailed listing of the trainees' savings. Additional trainee savings include per diem expenses and instructors' salaries.

The per diem savings associated with removing one week of residential training plus 2 days between both weeks of residential training equal \$280 per trainee ( $\$40 \times 7$  days). And, based on the assignment of 2.5 instructors for one week of residential training and 50 hours of instructor preparation time for each training session, an additional savings of \$193 is realized for each trainee (average GS 14/4 instructor salary of \$32.1 O/hour  $\times$  150 instructional and preparation hrs. = \$4,815/session divided by 25 students/session = \$192.60). Actual savings realized in dollars, minus the \$8 Federal Express expense cited above, total \$1,170 for each trainee who completes the ICI course. See Table 7 for details.

Items	Savings
Mean average dollars returned to investigative matters to nearest dollar	\$705
\$40 Per diem for seven days	\$280
2.5 GS 14/4 instructors @\$32.10/hr. + 50 hrs. prep time = \$48 15 \$48 15 divided by 25 trainees/class to nearest dollar	\$193
<b>Sub Total</b>	\$1178
Minus Fed Ex expense per trainee	- \$8
<b>Net Savings for ICI Course</b>	\$1,170

**Table 7.** Net savings per ICI course trainee.

During the first five months, a total of 23 1 trainees registered for the ICI course. With an ICI cost savings of \$1,170 per trainee, the ICI course has saved the FBI a total of \$270,270 to date. The ICI course paid for itself in only a little more than 2.5 months with 118 trainees completing the course. See Table 8. The projected savings for the first year of the ICI course is \$6 17,760 based on a mean average of 44 trainees registering for the course each month. Because the ICI course was developed in a manner which provides a three-year shelf life, savings to the FBI will total \$1,853,280. Given these dollar amounts, the ICI course is saving the FBI substantial training and investigative resources.



**Table 8.** Savings to the FBI.

*How many more people can NSD/OTU train as a result of the ICI course?* The former two-week residency BCI was limited to 25 trainees and was held at the FBI Academy. Upon initial examination, the reduction in residency training to one week enables NSD/OTU to train twice as many people in a two-week period as it could using traditional platform instructional methodologies. However, ICI course trainees are able to cover the first week, or 40 hours, of instruction in a mean average of 15 hours. As 160 copies of the ICI course exist, NSD/OTU is able to train 432 people during the same 40-hour period (160 ICI courses X 2.7 fifteen-hour segments in a forty-hour week). Due to the constraints at the FBI Academy, NSD/OTU is only able to offer one week residential BCI in-services every other week. Therefore, during a two-week period, NSD/OTU will be able to train a total of 457 people (432 ICI trainees + 25 BCI trainees). See Table 9.

Platform Instruction			ICI + Platform Instruction		
Residency BCI Course		Total Trained	ICI Course	Residency BCI Course	Total Trained
1 Week <sup>2</sup>	1 Week		1 Week	1 Week	
25 Students		25	432 Students <sup>3</sup>	25 Students	<b>457</b>

**Table 9.** Comparison of students trained.

Theoretically, this is not the limit of NSD/OTU productivity. Because the ICI course is independent of residential training, an additional 432 students can be trained while 25 students are attending the one week residency BCI companion course. This brings the ultimate productivity of NSD/OTU to 914 students during any two-week period. See Table 10.

ICI + BCI Instruction				
1 Week	1 Week	1 Week	1 Week	1 Week
432 <sup>4</sup>	25 <sup>5</sup>	432	25	432
25	432	25	432	25
Weekly Total Trained		457	457	
2-Week Total Trained		914		

**Table 10.** Total NSD/OTU students trained in any given two-week period.

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<sup>2</sup>Each training week is equal to 40 hours of training.

<sup>3</sup>The average completion rate of the ICI course is 15 hours. There are 2.7 15-hour segments in a training week and 160 copies of the ICI course exist (2.7 X 160 = 432).

<sup>4</sup>ICI students.

<sup>5</sup>BCI residency students.

While it is recognized that not all trainees would receive an equal amount of training during any two-week period, the ICI course affords trainees ample basic training to make them productive in their jobs. And, because a 40-hour BCI is much easier for the Training Division to schedule at Quantico than an 80-hour BCI, NSD/OTU can much more easily add BCI in-services when resources permit. As a result of ICI, NSD/OTU has increased its productivity tremendously.

### **Support Employee Use of ICI Course**

While the ICI course has revealed significant accomplishments for the SA population, care should be taken not to conclude the same results for the support population. Recently, the ICI course was offered to certain support personnel such as intelligence research specialists, intelligence operations specialists, and other select employees. Evaluating the impact the ICI course and distance learning has on support personnel is ongoing and will continue until 50 support employees pass the ICI final exam. These results will be conveyed at a later date.

### **Relationship Between IMIS and Other Forms of Distance Learning**

There are two types of distance learning -- synchronous and asynchronous. Synchronous distance learning typically uses some type of broadcast instructional medium such as video conferencing, teletraining, or satellite. It is instructor-led and requires that trainees gather at a specific place, at a specific time, and for a specific time period to receive training.

Asynchronous distance learning uses a variety of instructional mediums. The mediums can range from the less sophisticated, such as written materials, video tapes, and audio tapes, to the more sophisticated such as computer based training and interactive multimedia. Asynchronous

distance learning is not instructor-led; however, care is taken to insure that trainees have access to an instructor should they need assistance. The primary characteristic of asynchronous distance learning is that it is designed to be taken at a trainee's individual pace and at the convenience of the trainee.

While it is recognized that asynchronous distance learning such as NSD/OTU's ICI course has proven to be convenient, effective, efficient, and economical, care must be taken not to deduce that all forms of distance learning will provide the same dollar savings. While research has indicated that synchronous distance learning is more convenient than traveling to a centralized training site, synchronous distance learning typically does not provide as great a dollar savings as asynchronous distance learning. Additionally, synchronous distance learning does not necessarily reduce time spent training. For example, a 40-hour platform/residential in-service most often equals a 40-hour synchronous distance learning course. Because SAs can receive the synchronous distance learning in their offices, they can still return 10 hours back to investigative matters (based on an SA's average 50-hour work week). This means that for every 260 SAs who complete synchronous distance learning course, one SA work year is added to investigative matters. Compare this to adding one SA work year for every 74 SAs who completed the ICI asynchronous distance learning course. Clearly asynchronous distance learning provides optimal economic savings.

Converting a 40-hour, one week residential in-service to the ICI format, asynchronous distance learning will provide a greater financial savings to the FBI than synchronous distance learning. As stated earlier, the ICI course saves the FBI \$1,170 per trainee. This savings omits travel expenses as trainees must still travel to the FBI Academy to attend the new one week, 40-

hour BCI companion course. When a 40-hour residential in-service is converted totally to the ICI (asynchronous) format, i.e., not having any residential companion course associated with it, an additional savings of \$400<sup>6</sup> in travel expenses would be realized for each trainee who completed the training because travel would be eliminated completely from the training process. This would ultimately provide a \$1,570 savings for each trainee who completed an in-service using the ICI, or asynchronous distance learning, instructional format.

The value of asynchronous distance learning is not only limited to the field division which uses this type of training. Savings in travel and per diem expenses benefit the Training Division while added SA work years benefit investigative and operational divisions at FBIHQ. In the case of ICI, each ICI trainee saves the Training Division \$280 in per diem expenses while potentially contributing an average of 35 hours to NSD operational matters. These multi-divisional benefits are the true value of asynchronous distance learning.

## **Summary**

In late November 1996, NSD/OTU delivered the FBI's first in-service via distance learning. The pilot course, Introduction to Counterintelligence (ICI), was delivered to the field in three phases. Evaluation of the course continued until 50 trainees, the equivalent of two residency based in-services, passed the ICI final exam. Donald Kirkpatrick's Four Levels of Evaluating Training Programs was used to evaluate this pilot course. Each level addressed a specific aspect of training, e.g., Reaction, Learning, Behavior, and Results. All four evaluation levels revealed positive results from the ICI course. The ICI course was well received by both

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<sup>6</sup>This figure is based on the travel expenses estimated for each in-service trainee by the FBI Academy's Training Division.

trainees and instructors. Trainees learned from this course as demonstrated by a mean average of 20 percentage points between pre- and post-test scores. Trainees were able to complete the ICI course in 15 hours, or 63% less time it took trainees to complete the same material through residency training. This resulted in a time savings of 35 hours for each SA trained using the asynchronous distance learning method. The time saved can then be redirected to investigative matters. Therefore, the FBI could view the savings of 35 hours per SA trained using the asynchronous distance learning method as gaining one full SA work-year for every 74 SAs who complete the training.

Overall, the FBI stands to save \$1 ,170 for each SA trainee (see Table 7) who completes the ICI course. Travel expenses were excluded from the potential savings for SA trainees because they would incur travel expenses when attending the shortened, one week companion BCI course at the FBI Academy. In situations where the trainee is only taking the ICI course and is not required to take the companion BCI course at a later date, an additional \$400 in travel costs would be realized.

In addition to the substantial financial and investigative returns exhibited by the ICI course, recognition must also be given to the fact that the financial and investigative returns cross divisional boundaries. In the case of the ICI course, the Training Division is saving per diem expenses, and the NSD is gaining SA work years. When asynchronous distance learning courses are developed which do not have companion courses associated with them, the Training Division will realize additional travel savings.

NSD/OTU's pilot ICI course has made a tremendous impact on the traditional methods of FBI training and distance learning endeavors. Via ICI, NSD/OTU has shown that training can be



accomplished in the FBI via asynchronous distance learning methods and that to truly save dollars and investigative resources, FBI managers must re-engineer traditional concepts of training delivery. The ICI course has established the benchmark which other FBI-sponsored distance learning initiatives will be compelled to meet.

## **Appendix A - Distribution Phases**

### **Phase 1**

Atlanta	Louisville
Baltimore	Newark
Birmingham	Sacramento
Buffalo	Salt Lake City
Dallas	San Antonio
Detroit	San Diego
Honolulu	San Francisco
Las Vegas	San Juan
Los Angeles	Springfield

### **Phase 2**

Albuquerque	Miami
Boston	Milwaukee
Charlotte	New Orleans
Chicago	New York
Denver	Oklahoma City
Indianapolis	Philadelphia
Kansas City	Richmond
Knoxville	Seattle
Little Rock	Washington Field

### **Phase 3**

Albany	Minneapolis
Anchorage	Mobile
Cincinnati	New Haven
Cleveland	Norfolk
Columbia	Omaha
El Paso	Phoenix
Houston	Pittsburgh
Jackson	Portland
Jacksonville	St. Louis
Memphis	Tampa

## Appendix B - Question Bank Numbers by Course Objectives

Course Objectives by No.	No. Questions To Be Answered	Total Questions in Bank
1	1	5
2	2	10
3	2	10
4	3	15
5	3	15
6	2	10
7	5	25
8	4	20
9	3	15
10	3	15
11	2	10
12	3	15
13	3	15
14	2	10
15	2	10
16	2	10
17	1	5
18	2	10
19	2	10
20	2	10
21	2	10
22	2	10
	<b>Total Questions on Each Pre- and Post Test: 53</b>	<b>Total Questions in Banks: 265</b>

### Appendix C - Pre- and Post-Test Results

Student Number	Pre-Test Score	Post-Test Score	Score Difference
1	87	89	2
2	72	91	19
3	70	87	17
4	79	96	17
5	62	94	32
6	75	94	19
7	64	89	25
8	70	94	24
9	79	91	12
10	66	81	15
11	74	87	13
12	72	93	21
13	66	91	25
14	72	87	15
15	72	89	17
16	70	92	22
17	70	93	23
18	70	87	17
19	70	92	22
20	72	91	19
21	70	93	23
22	74	96	22
23	74	87	13
24	74	89	15

Student Number	Pre-Test Score	Post-Test Score	Score Difference
25	64	96	32
26	79	89	10
27	57	94	37
28	72	94	22
29	70	94	24
30	57	83	26
31	58	91	33
32	77	91	14
33	70	87	17
34	60	89	29
35	77	85	8
36	70	87	17
37	72	87	15
38	74	92	18
39	58	94	36
40	60	85	25
41	72	92	20
42	81	93	12
43	74	91	17
44	72	87	15
45	68	96	28
46	79	96	17
47	75	96	21
48	72	92	20
49	81	89	8

Student Number	Pre-Test Score	Post-Test Score	Score Difference
50	60	85	25
	Average Pre-Test 70.66%	Average Post Test 90.56%	Average Difference 19.9%

## Appendix D - Hourly Wages

Student Number	Hr. Wage In \$	Work Hrs. Saved	Net Savings in \$
1	32.64	41	1338.24
2	27.42	29	795.18
3	27.62	17	469.54
4	27.62	37	1021.94
5	15.31	25	382.75
6	25	34	850
7	20.83	9	187.47
8	20.46	28	572.88
9	16.26	29	471.54
10	15.26	23	350.98
11	17.23	39	671.97
12	17.23	12	206.76
13	26.97	41	1105.77
14	24.52	33	809.16
15	29.60	46	1361.60
16	24.52	46	1127.92
17	15.66	39	610.74
18	16.84	34	572.56
19	16.18	34	550.12
20	18.25	44	803
21	17.66	41	724.06
22	20.02	37	740.74
23	17.66	42	741.72
24	17.66	10	176.60

Student Number	Hr. Wage In \$	Work Hrs. Saved	Net Savings in \$
25	17.66	35	618.10
26	18.25	40	730
27	16.84	41	690.44
28	17.66	43	759.38
29	18.25	37	675.25
30	17.66	39	688.74
31	17.66	21	370.86
32	18.25	34	620.50
33	18.25	43	784.75
34	17.66	43	759.38
35	18.25	41	748.25
36	18.25	37	675.25
37	18.25	41	748.25
38	18.25	42	766.50
39	20.61	31	638.91
40	17.66	20	353.20
41	15.66	40	626.40
42	30.43	33	1004.19
43	17.66	40	706.40
44	18.25	43	784.75
45	28.61	33	944.13
46	17.41	43	748.63
47	32.27	43	1387.61
48	16.18	37	598.66
49	16.18	34	550.12



Student Number	Hr. Wage In \$	Work Hrs. Saved	Net Savings in \$
50	15.66	39	610.74
Total Savings			\$35,232.63
Mean Average Savings/Student			\$704.65